

This listing of claims will replace all prior versions and listings of claims in the application.

**LISTING OF CLAIMS**

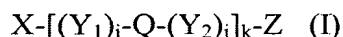
1-7. (Cancelled)

8. (Currently Amended) Surface according to claim 6-14, wherein said surface is selected from the group consisting of a SiO<sub>2</sub> surface of a silicon wafer, glass, quartz, fused silica, gold and a polymer.

9-13. (Cancelled)

14. (Currently Amended) ~~Surface according to claim 11~~

A surface carrying a linker system comprising a compound for activating surfaces for bioconjugation having the following general formula (I):



wherein:

X is a reactive group capable of covalently binding to a surface and is selected from the group consisting of a SiW<sub>3</sub> group with W being a hydrolyzable atom or group, a group capable of forming free radicals on exposure to light, an anthrathione group or a derivative thereof, an anthraquinone group or a derivative thereof, and a benzophenone group or a derivative thereof;

Z is a reactive group capable of covalently binding to a biomolecule, is capable of nucleophilic substitution reactions, nucleophilic addition reactions, Diels-Alder reactions or radical substitutions, and is selected from the group consisting of a diene group, a dienophilic group, an aldehyde group, a hydroxyl group, a carboxylic acid group, an active ester group, an amino group, a thiol group, an aziridine group, an isocyanate group, an isothiocyanate group, an azide group, and a reactive leaving group;

X is not Z;

Y<sub>1</sub> and Y<sub>2</sub> are, independently from each other, CR<sub>1</sub>R<sub>2</sub>;

R<sub>1</sub> and R<sub>2</sub> are, independently from each other, H, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy or C<sub>1</sub>-C<sub>4</sub> acyloxy;

i, j, and k are, independently from each other, an integer in the range from 1 to 10;  
the total number of C atoms in Y<sub>1</sub> and Y<sub>2</sub>, the C atoms of R<sub>1</sub> and R<sub>2</sub> not included,  
is in the range of 2 to 100;

Q is a hydrophilic atom or group selected from the group consisting of O, NH,  
C=O, O-C=O and CR<sub>3</sub>R<sub>4</sub>;

R<sub>3</sub> and R<sub>4</sub> are, independently from each other, selected from the group consisting  
of H, OH, C<sub>1</sub>-C<sub>4</sub> alkoxy and C<sub>1</sub>-C<sub>4</sub> acyloxy; and

R<sub>3</sub> and R<sub>4</sub> are not H at the same time;

wherein when Q = NH, Z is not NH<sub>2</sub>;

wherein when k > 1, the Q's for each [(Y<sub>1</sub>)<sub>i</sub>-Q-(Y<sub>2</sub>)<sub>j</sub>]<sub>k</sub> are independently selected  
from each other; and

wherein the linker system is covalently bonded to a biomolecule

wherein said biomolecule is a partner of a specifically interacting system of  
complementary binding partners;

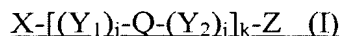
wherein said specifically interacting system of complementary binding partners is  
based on nucleic acid/complementary nucleic acid, peptide nucleic acid/nucleic acid,  
enzyme/substrate, receptor/effector, lectin/sugar, antibody/antigen, avidin/biotin or strept-  
avidin/biotin interaction; and

wherein said antibody is a polyclonal, monoclonal, chimeric or single-chain  
antibody or a functional fragment or derivative of such antibodies.

15. (Currently Amended) Process for the detection of a biomolecule which is a partner of a specifically interacting system of complementary binding partners, comprising the steps of:

- a) contacting a surface ~~according to claim 10~~ with a sample suspected to contain the complementary binding partner,
- b) removing non-specifically bound sample components in a washing step, and
- c) detecting specifically bound sample components;

wherein the surface carries a linker system comprising a compound for activating  
surfaces for bioconjugation having the following general formula (I):



wherein:

X is a reactive group capable of covalently binding to a surface and is selected from the group consisting of a  $\text{SiW}_3$  group with W being a hydrolyzable atom or group, a group capable of forming free radicals on exposure to light, an anthrathione group or a derivative thereof, an anthraquinone group or a derivative thereof, and a benzophenone group or a derivative thereof;

Z is a reactive group capable of covalently binding to the biomolecule, is capable of nucleophilic substitution reactions, nucleophilic addition reactions, Diels-Alder reactions or radical substitutions, and is selected from the group consisting of a diene group, a dienophilic group, an aldehyde group, a hydroxyl group, a carboxylic acid group, an active ester group, an amino group, a thiol group, an aziridine group, an isocyanate group, an isothiocyanate group, an azide group, and a reactive leaving group;

X is not Z;

$Y_1$  and  $Y_2$  are, independently from each other,  $\text{CR}_1\text{R}_2$ ;

$R_1$  and  $R_2$  are, independently from each other, H,  $\text{C}_1\text{-C}_4$  alkyl,  $\text{C}_1\text{-C}_4$  alkoxy or  $\text{C}_1\text{-C}_4$  acyloxy;

i, j, and k are, independently from each other, an integer in the range from 1 to 10;  
the total number of C atoms in  $Y_1$  and  $Y_2$ , the C atoms of  $R_1$  and  $R_2$  not included, is in the range of 2 to 100;

Q is a hydrophilic atom or group selected from the group consisting of O, NH, C=O, O-C=O and  $\text{CR}_3\text{R}_4$ ;

$R_3$  and  $R_4$  are, independently from each other, selected from the group consisting of H, OH,  $\text{C}_1\text{-C}_4$  alkoxy and  $\text{C}_1\text{-C}_4$  acyloxy; and

$R_3$  and  $R_4$  are not H at the same time;

wherein when  $Q = \text{NH}$ , Z is not  $\text{NH}_2$ ;

wherein when  $k > 1$ , the Q's for each  $[(Y_1)_i\text{-Q-(Y}_2)_j]_k$  are independently selected from each other; and

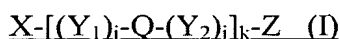
wherein the linker system is covalently bonded to the biomolecule and said biomolecule is a partner of a specifically interacting system of complementary binding partners.

16. (Previously Presented) Process according to claim 15 wherein for said detecting, a colored, fluorescent, bioluminescent, chemoluminescent, phosphorescent or radioactive label; an enzyme; an antibody or a functional fragment or derivative thereof, a protein A/gold based system; a biotin/avidin/streptavidin based system; or an enzyme electrode based system is used.

17. (Currently Amended) Process for the isolation of a biomolecule which is a partner of a specifically interacting system of complementary binding partners, comprising the steps of:

- a) contacting a surface ~~according to claim 10~~ with a sample suspected to contain the biomolecule complementary binding partner,
- b) removing non-specifically bound sample components in a washing step, and, optionally,
- c) eluting specifically bound sample components;

wherein the surface carries a linker system comprising a compound for activating surfaces for bioconjugation having the following general formula (I):



wherein:

X is a reactive group capable of covalently binding to a surface and is selected from the group consisting of a SiW<sub>3</sub> group with W being a hydrolyzable atom or group, a group capable of forming free radicals on exposure to light, an anthrathione group or a derivative thereof, an anthraquinone group or a derivative thereof, and a benzophenone group or a derivative thereof;

Z is a reactive group capable of covalently binding to the biomolecule, is capable of nucleophilic substitution reactions, nucleophilic addition reactions, Diels-Alder reactions or radical substitutions, and is selected from the group consisting of a diene group, a dienophilic group, an aldehyde group, a hydroxyl group, a carboxylic acid group, an active ester group, an amino group, a thiol group, an aziridine group, an isocyanate group, an isothiocyanate group, an azide group, and a reactive leaving group;

X is not Z;

Y<sub>1</sub> and Y<sub>2</sub> are, independently from each other, CR<sub>1</sub>R<sub>2</sub>;

R<sub>1</sub> and R<sub>2</sub> are, independently from each other, H, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy or C<sub>1</sub>-C<sub>4</sub> acyloxy;

i, j, and k are, independently from each other, an integer in the range from 1 to 10;  
the total number of C atoms in Y<sub>1</sub> and Y<sub>2</sub>, the C atoms of R<sub>1</sub> and R<sub>2</sub> not included,  
is in the range of 2 to 100;

Q is a hydrophilic atom or group selected from the group consisting of O, NH, C=O, O-C=O and CR<sub>3</sub>R<sub>4</sub>;

R<sub>3</sub> and R<sub>4</sub> are, independently from each other, selected from the group consisting of H, OH, C<sub>1</sub>-C<sub>4</sub> alkoxy and C<sub>1</sub>-C<sub>4</sub> acyloxy; and

R<sub>3</sub> and R<sub>4</sub> are not H at the same time;

wherein when Q = NH, Z is not NH<sub>2</sub>;

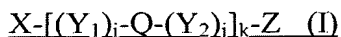
wherein when k > 1, the Q's for each [(Y<sub>1</sub>)<sub>i</sub>-Q-(Y<sub>2</sub>)<sub>j</sub>]<sub>k</sub> are independently selected from each other; and

wherein the linker system is covalently bonded to the biomolecule and the biomolecule is a partner of a specifically interacting system of complementary binding partners.

18. (Currently Amended) A method of affinity chromatography comprising the steps of:

providing a surface ~~according to claim 10~~ as an affinity matrix; and  
performing affinity chromatography with the affinity matrix;

wherein the surface carries a linker system comprising a compound for activating surfaces for bioconjugation having the following general formula (I):



wherein:

X is a reactive group capable of covalently binding to a surface and is selected from the group consisting of a SiW<sub>3</sub> group with W being a hydrolyzable atom or group, a group capable of forming free radicals on exposure to light, an anthrathione group or a derivative thereof, an anthraquinone group or a derivative thereof, and a benzophenone group or a derivative thereof;

Z is a reactive group capable of covalently binding to a biomolecule, is capable of nucleophilic substitution reactions, nucleophilic addition reactions, Diels-Alder reactions

or radical substitutions, and is selected from the group consisting of a diene group, a dienophilic group, an aldehyde group, a hydroxyl group, a carboxylic acid group, an active ester group, an amino group, a thiol group, an aziridine group, an isocyanate group, an isothiocyanate group, an azide group, and a reactive leaving group;

X is not Z;

Y<sub>1</sub> and Y<sub>2</sub> are, independently from each other, CR<sub>1</sub>R<sub>2</sub>;

R<sub>1</sub> and R<sub>2</sub> are, independently from each other, H, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy or C<sub>1</sub>-C<sub>4</sub> acyloxy;

i, j, and k are, independently from each other, an integer in the range from 1 to 10; the total number of C atoms in Y<sub>1</sub> and Y<sub>2</sub>, the C atoms of R<sub>1</sub> and R<sub>2</sub> not included, is in the range of 2 to 100;

Q is a hydrophilic atom or group selected from the group consisting of O, NH, C=O, O-C=O and CR<sub>3</sub>R<sub>4</sub>;

R<sub>3</sub> and R<sub>4</sub> are, independently from each other, selected from the group consisting of H, OH, C<sub>1</sub>-C<sub>4</sub> alkoxy and C<sub>1</sub>-C<sub>4</sub> acyloxy; and

R<sub>3</sub> and R<sub>4</sub> are not H at the same time;

wherein when Q = NH, Z is not NH<sub>2</sub>;

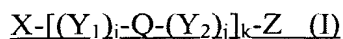
wherein when k > 1, the Q's for each [(Y<sub>1</sub>)<sub>i</sub>-Q-(Y<sub>2</sub>)<sub>j</sub>]<sub>k</sub> are independently selected from each other; and

wherein the linker system is covalently bonded to a biomolecule and the biomolecule is a partner of a specifically interacting system of complementary binding partners.

19. (Currently Amended) A method of detecting a biomolecule comprising the steps of:

providing a sensor chip or biochip comprising a surface ~~according to claim 10~~; and detecting a biomolecule with the sensor chip or biochip;

wherein the surface carries a linker system comprising a compound for activating surfaces for bioconjugation having the following general formula (I):



wherein:

X is a reactive group capable of covalently binding to a surface and is selected from the group consisting of a SiW<sub>3</sub> group with W being a hydrolyzable atom or group, a group capable of forming free radicals on exposure to light, an anthrathione group or a derivative thereof, an anthraquinone group or a derivative thereof, and a benzophenone group or a derivative thereof;

Z is a reactive group capable of covalently binding to a biomolecule, is capable of nucleophilic substitution reactions, nucleophilic addition reactions, Diels-Alder reactions or radical substitutions, and is selected from the group consisting of a diene group, a dienophilic group, an aldehyde group, a hydroxyl group, a carboxylic acid group, an active ester group, an amino group, a thiol group, an aziridine group, an isocyanate group, an isothiocyanate group, an azide group, and a reactive leaving group;

X is not Z;

Y<sub>1</sub> and Y<sub>2</sub> are, independently from each other, CR<sub>1</sub>R<sub>2</sub>;

R<sub>1</sub> and R<sub>2</sub> are, independently from each other, H, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy or C<sub>1</sub>-C<sub>4</sub> acyloxy;

i, j, and k are, independently from each other, an integer in the range from 1 to 10; the total number of C atoms in Y<sub>1</sub> and Y<sub>2</sub>, the C atoms of R<sub>1</sub> and R<sub>2</sub> not included, is in the range of 2 to 100;

Q is a hydrophilic atom or group selected from the group consisting of O, NH, C=O, O-C=O and CR<sub>3</sub>R<sub>4</sub>;

R<sub>3</sub> and R<sub>4</sub> are, independently from each other, selected from the group consisting of H, OH, C<sub>1</sub>-C<sub>4</sub> alkoxy and C<sub>1</sub>-C<sub>4</sub> acyloxy; and

R<sub>3</sub> and R<sub>4</sub> are not H at the same time;

wherein when Q = NH, Z is not NH<sub>2</sub>;

wherein when k > 1, the Q's for each [(Y<sub>1</sub>)<sub>i</sub>-Q-(Y<sub>2</sub>)<sub>j</sub>]<sub>k</sub> are independently selected from each other; and

wherein the linker system is covalently bonded to a biomolecule and the biomolecule is a partner of a specifically interacting system of complementary binding partners.

20. (Currently Amended) Medical or diagnostic instrument comprising a surface according to claim 1014.

21. (Cancelled)

22. (Cancelled)

23. (Currently Amended) The method of claim ~~22~~15, wherein said surface comprises a silicon oxide or gold. |